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SECRET

Eng-8-905

Chief, Operations and Training Division, OC

18 AUG 1958

Chief, Engineering Division, OC

This document is part of an integrated file. If separated from the file it must be subjected to individual systematic review.

Results of Beacon Feasibility Study

1. A study program to determine systems design of the Drop Zone Location Beacon, BE-1, has just been completed. The contractor conducting this study has concluded that a beacon meeting our requirements can be designed to work with existing aircraft equipment and recommends such an approach to avoid the weight and power requirement of additional aircraft equipment.

2. The proposed beacon would be a small, low-drain device with crystal radar detector, transistor control circuits, and a one-watt UHF transmitter which would return X-band radar pulses via a UHF link. The use of UHF for the reply link eliminates the X-band magnetron which contributes greatly to the size and current demand of conventional radar beacons.

3. From the list of aircraft equipment provided by the Air Maritime Division, FFS, the contractor has determined that the APN-59 and ARC-34, or similar equipment, are most suitable for use with the proposed beacon. In operation, the pilot sees the beacon as a bright spot on his radar screen and reads its exact distance on a counter or dial mounted on a small accessory unit. The aircraft radar need not remain on; once the beacon is triggered, the pilot may leave the radar off and home in with his ARA-25 UHF direction finder, or switch the radar on from time to time to get additional fixes. A unique over-beacon indicator, using the Doppler principle, is suggested by the contractor. The pilot would receive a positive indication (probably a flashing panel lamp) as he passed over the beacon.

4. Coded radar pulses could be used with the beacon to prevent accidental triggering by X-band radar signals from unfriendly aircraft. Since the only device consuming significant power in the system would be the one-watt UHF transmitter, it is likely that a beacon using this principle would have much greater stand-by life than any beacon heretofore developed.

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5. It is the opinion of this Division that a beacon using this principle of operation can satisfy the requirements of Specification No. 58-A-1065-A "Task Outline for Drop Zone Location System, DS-1". Your comments on this approach to the problem are invited prior to the issuance of development specifications and the solicitation of proposals by this Division.

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Air Maritime Division, PPS
R+D Lab
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